Patent Claims

1. Ionic mesogenic or ionic liquid crystalline (LC) compounds comprising at least one organic cation D^+ that is linked to a mesogenic group MG, optionally via a spacer group Sp^1, or is part of a mesogenic group.

2. Compounds according to claim 1, selected of formula I

$$R\text{-}MG\text{-}Sp^1\text{-}D^+ E^- \qquad I$$

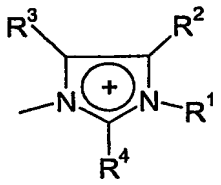
wherein

D^+	is an organic cation,
E^-	is an anion,
MG	is a mesogenic group,
Sp^1	is a spacer group or a single bond,
R	is H, F, Cl, Br, I, CN, NO_2, NCS, SF_5 or alkyl which is straight chain or branched, has 1 to 20 C-atoms, is unsubstituted, mono- or polysubstituted by F, Cl, Br, I or CN, and in which one or more non-adjacent CH_2 groups are optionally replaced, in each case independently from one another, by -O-, -S-, -NH-, -NR^0-, -SiR^0R^{00}-, -CO-, -COO-, -OCO-, -OCO-O-, -S-CO-, -CO-S-, -CY^1=CY^2- or -C≡C- in such a manner that O and/or S atoms are not linked directly to one another, or denotes P-Sp^2,
R^0 and R^{00}	are independently of each other H or alkyl with 1 to 12 C-atoms,
Y^1 and Y^2	are independently of each other H, F, Cl or CN,

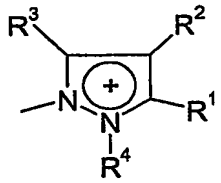
P is a polymerizable or reactive group,

Sp^2 is a spacer group or a single bond.

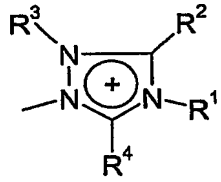
3. Compounds according to claim 1 or 2, characterized in that the cation D^+ is selected from the following formulae



I1



I2



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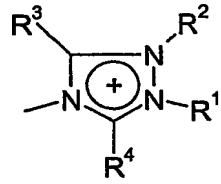
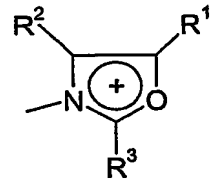


I4



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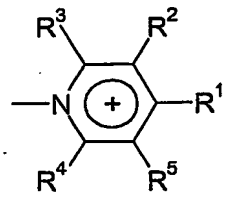

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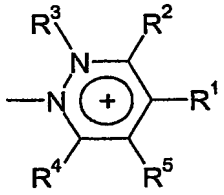

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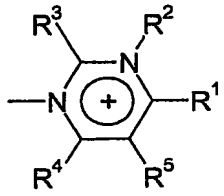

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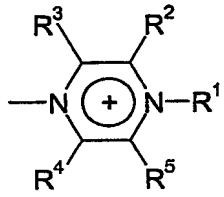


I9

wherein R^1 to R^5 have independently of each other one of the meanings of R in claim 2.

4. Compounds according to at least one of claims 1 to 3, characterized in that the anion E^- is selected from the group comprising F^-, Cl^-, Br^-, I^-, I_3^-, CH_3COO^-, CF_3COO^-, $CF_3(CF_2)_3COO^-$, lactate, NO_3^-, $[(CF_3SO_2)_2N]^-$, $[(CF_3CF_2SO_2)_2N]^-$, $CF_3SO_3^-$, $[CF_3(CF_2)_3SO_3]^-$, $[(CF_3SO_2)_3C]^-$, PF_6^-, AsF_6^-, SbF_6^-, BF_4^-, ClO_4^-, $[P(C_nF_{2n+1})_{6-x}F_x]^-$, Ph_4B^- and $[(C_nH_{2n+1})_4B]^-$ wherein x is an integer from 1 to 6 and Ph is phenyl.

5. Compounds according to at least one of claims 1 to 4, characterized in that the mesogenic group MG is selected of formula II

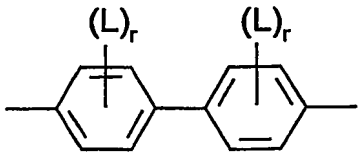
$-(A^2-Z^2)-A^1-Z^1-$ II

wherein

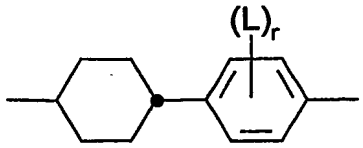
A^1 and A^2	are independently of each other an aromatic or alicyclic group, or a group comprising two or more fused aromatic or alicyclic rings, wherein these rings optionally contain one or more hetero atoms selected from N, O and S, and are optionally mono- or polysubstituted by R as defined in claim 2,
Z^1 and Z^2	are independently of each other -O-, -S-, -CO-, -COO-, -OCO-, -S-CO-, -CO-S-, -O-COO-, -CO-NR^0-, -NR^0-CO-, -OCH_2-, -CH_2O-, -SCH_2-, -CH_2S-, -CF_2O-, -OCF_2-, -CF_2S-, -SCF_2-, -CH_2CH_2-, -CF_2CH_2-, -CH_2CF_2-, -CF_2CF_2-, -CH=N-, -N=CH-, -N=N-, -$CH=CR^0$-, -$CY^1=CY^2$-, -C≡C-, -CH=CH-COO-, -OCO-CH=CH- or a single bond,
m	is 0, 1, 2 or 3.

6. Compounds according to at least one of claims 1 to 5, characterized in that the mesogenic group MG comprises at least two monocyclic groups or at least one bicyclic group comprising at least two fused rings.

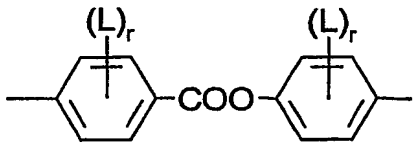
7. Compounds according to at least one of claims 1 to 6, characterized in that the mesogenic group MG is selected from the following formulae and their mirror images



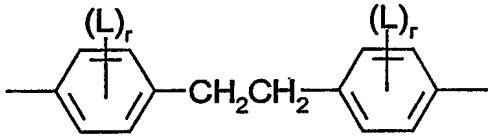
IIa



IIb



IIc

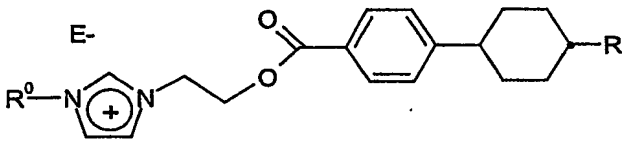


IId

IIe

wherein L has one of the meanings of R in claim 2 and r is 1, 2, 3 or 4.

8. Compounds according to at least one of claims 1 to 7, characterized in that they are selected from the following formulae



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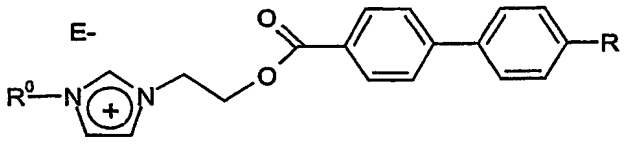
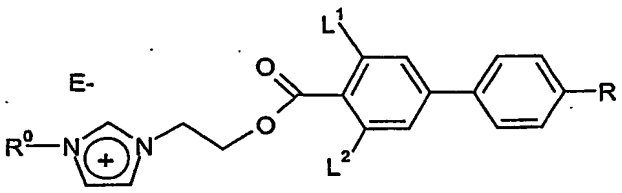


Ib



Ic

wherein E^-, R and R^0 have one of the meanings of claim 2, and L^1 and L^2 have one of the meanings of L given in claim 6.

9. Compounds according to at least one of claims 1 to 8, characterized in that they they comprise at least one polymerizable group.

10. Liquid crystal medium, characterized in that it comprises at least one compound according to at least one of claims 1 to 9.

11. Polymerizable liquid crystal medium, characterized in that it comprises at least one compound according to at least one of claims 1 to 9 and at least one polymerizable mesogenic compound, which can be said compound of claims 1 to 9 and/or an additional compound.

12. Polymer obtained by polymerizing a compound according to at least one of claims 1 to 9 or a liquid crystal medium according to claim 11.

13. Anisotropic polymer film obtained by polymerizing a compound or medium according to at least one of claims 1 to 11 in its oriented state.

14. Use of a compound, medium, polymer or polymer film according to at least one of claims 1 to 13 in electrooptical displays, liquid crystal displays, optical films, polarizers, compensators, beam splitters, reflective films, alignment layers, colour filters, holographic elements, hot stamping foils, coloured images, decorative or security markings e.g. for consumer objects or documents of value, LC pigments, adhesives, synthetic resins

with anisotropic mechanical properties, cosmetics, diagnostics, nonlinear optics, optical information storage, as chiral dopants, in electronic devices like for example field effect transistors (FET) as components of integrated circuitry, as thin film transistors in flat panel display applications or for Radio Frequency Identification (RFID) tags, or in semiconducting components for organic light emitting diode (OLED) applications, electroluminescent displays or backlights of LCDs, for photovoltaic or sensor devices, in lasing applications and devices, as electrolyte materials, in electrochemical cells or batteries, as photoconductors, for electrophotographic applications or electrophotographic recording or as lubricants.

15. Liquid crystal device comprising a compound, LC medium, polymer or polymer film according to at least one of claims 1 to 13.

16. Liquid crystal device utilizing the Kerr effect comprising a compound, LC medium, polymer or polymer film according to at least one of claims 1 to 13.

17. Electrolyte medium comprising a compound, LC medium or polymer according to at least one of claims 1 to 13.

18. Electrochemical cell comprising a compound, LC medium or polymer according to at least one of claims 1 to 13 or an electrolyte medium according to claim 17.